We claim:

1. Isolated nucleic acid molecule which encodes a cancer associated antigen, whose amino acid sequence is identical to the amino acid sequence encoded by the nucleotide sequence of SEQ ID NO: 1, 3, 4, 8, 15, 19, 22, 26, or 31.

2. The isolated nucleic acid molecule of claim 1, comprising the nucleotide sequence of SEQ ID NO: 1.

3. The isolated nucleic acid molecule of claim 1, comprising the nucleotide sequence of SEQ ID NO: 3.

4. The isolated nucleic acid molecule of claim 1, comprising the nucleotide sequence of SEQ ID NO: 4.

5. The isolated nucleic acid molecule of claim 1, comprising the nucleotide sequence of SEQ ID NO: 8.

6. The isolated nucleic acid molecule of claim 1, comprising the nucleotide sequence of SEQ ID NO: 15.

7. The isolated nucleic acid molecule of claim 1, comprising the nucleotide sequence of SEQ ID NO: 19.

8. The isolated nucleic acid molecule of claim 1, comprising the nucleotide sequence of SEQ ID NO: 22.

9. The isolated nucleic acid molecule of claim 1, comprising the nucleotide sequence of SEQ ID NO: 26.

10. The isolated nucleic acid molecule of claim 1, comprising the nucleotide sequence of SEQ ID NO: 31.

11. Expression vector comprising the isolated nucleic acid molecule of claim 1, operably linked to a promoter.

12. Eukaryotic cell line or prokaryotic cell strain, transformed or transfected with the isolated nucleic acid molecule of claim 1.

13. Isolated cancer associated antigen comprising all or part of the amino acid sequence encoded by SEQ ID NO: 1, 3, 4, 8, 15, 19, 22, 26 or 31.

14. Eukaryotic cell line or prokaryotic cell strain, transformed or transfected with the expression vector of claim 11.

15. The eukaryotic cell line or prokaryotic cell strain of claim 14, wherein said cell line is also transfected with a nucleic acid molecule coding for a cytokine.

16. The eukaryotic cell line or prokaryotic cell strain of claim 14, wherein said cell line is further transfected by a nucleic acid molecule coding for an MHC molecule.

17. The eukaryotic cell line or prokaryotic cell strain of claim 14, wherein said cytokine is an interleukin.

18. The eukaryotic cell line or prokaryotic cell strain of claim 17, wherein said interleukin is IL-2, IL-4 or IL-12.

19. The eukaryotic cell line or prokaryotic cell strain of claim 14, wherein said cell line has been rendered non-proliferative.

20. The eukaryotic cell line of claim 14, wherein said cell line is a fibroblast cell line.

21. Expression vector comprising a mutated or attenuated virus and the isolated nucleic acid molecule of claim 1.

22. The expression vector of claim 21, wherein said virus is adenovirus or vaccinia virus.

23. The expression vector of claim 22, wherein said virus is vaccinia virus.

24. The expression vector of claim 22, wherein said virus is adenovirus.

25. Expression system useful in transfecting a cell, comprising (i) a first vector containing a nucleic acid molecule which codes for the isolated cancer associated antigen of claim 14 and (ii) a second vector selected from the group consisting of (a) a vector containing a nucleic acid molecule which codes for an MHC or HLA molecule which presents an antigen derived from said cancer associated antigen and (b) a vector containing a nucleic acid molecule which codes for an interleukin.

26. Immunogenic composition comprising the isolated cancer antigen of claim 13, and a pharmaceutically acceptable adjuvant.

27. The immunogenic composition of claim 26, wherein said adjuvant is a cytokine, a saponin, or GM-CSF.

28. Immunogenic composition comprising at least one peptide consisting of an amino acid sequence of from 8 to 12 amino acids concatenated to each other in the isolated cancer associated cancer antigen of claim 13, and a pharmaceutically acceptable adjuvant.

29. The immunogenic composition of claim 27, wherein said adjuvant is a saponin, a cytokine, or GM-CSF.

30. The immunogenic composition of claim 26, wherein said composition comprises a plurality of peptides which complex with a specific MHC molecule.

31. Immunogenic composition which comprises at least one expression vector which encodes a peptide derived from the amino acid sequence encoded by SEQ ID NO: 1, 3, 4, 8, 15, 19, 22, 26 or 31.

32. The immunogenic composition of claim 28, wherein said peptide consists of amino acid sequence LLSHGAVIEV or SLSKILDTV.

33. The immunogenic composition of claim 31, wherein said at least one expression vector codes for a plurality of peptides.

34. Vaccine useful in treating a subject afflicted with a cancerous condition comprising the isolated eukaryotic cell line of claim 14 and a pharmacologically acceptable adjuvant.

35. The vaccine of claim 34, wherein said eukaryotic cell line has been rendered non-proliferative.

36. The vaccine of claim 35, wherein said eukaryotic cell line is a human cell line.

37. A composition of matter useful in treating a cancerous condition comprising a non-proliferative cell line having expressed on its surface a peptide derived from the amino acid sequence encoded by SEQ ID NO: 1, 3, 4, 8, 15, 19, 22, 26 or 31.

38. The composition of matter of claim 37, wherein said cell line is a human cell line.

39. A composition of matter useful in treating a cancerous condition, comprising (i) a peptide derived from the amino acid sequence encoded by SEQ ID NO: 1, 3, 4, 8, 15, 19, 22, 26 or 31, (ii) an MHC or HLA molecule, and (iii) a pharmaceutically acceptable carrier.

40. Isolated antibody which is specific for the cancer associated antigen of claim 13.

41. The isolated antibody of claim 40, wherein said antibody is a monoclonal antibody.

42. Method for screening for cancer in a sample, comprising contacting said sample with a nucleic acid molecule which hybridizes to all or part of the molecule encoded by SEQ ID NO: 1, 2, 3, 4, 8, 15, 19, 22, 26 or 31 and determining hybridization as an indication of cancer cells in said sample.

43. A method for screening for cancer in a sample, comprising contacting said sample with the isolated antibody of claim 40, and determining binding of said antibody to a target as an indicator of cancer.

44. Method for diagnosing a cancerous condition in a subject, comprising contacting an immune reactive cell containing sample of said subject to a cell line transfected with

the isolated nucleic acid molecule of claim 1, and determining interaction of said transfected cell line with said immunoreactive cell, said interaction being indicative of said cancer condition.

45. A method for determining regression, progression of onset of a cancerous condition comprising monitoring a sample from a patient with said cancerous condition for a parameter selected from the group consisting of (i) a protein encoded by SEQ ID NO: 1, 2, 3, 4, 8, 15, 19, 22, 26 or 31, (ii) a peptide derived from said protein, (iii) cytolytic T cells specific for said peptide and an MHC molecule with which it non-covalently complexes, and (iv) antibodies specific for said CT protein, wherein amount of said parameter is indicative of progression or regression or onset of said cancerous condition.

46. The method of claim 45, wherein said sample is a body fluid or exudate.

47. The method of claim 45, wherein said sample is a tissue.

48. The method of claim 45, comprising contacting said sample with an antibody which specifically binds with said protein or peptide.

49. The method of claim 48, wherein said antibody is labelled with a radioactive label or an enzyme.

50. The method of claim 48, wherein said antibody is a monoclonal antibody.

51. The method of claim 45, comprising amplifying RNA which codes for said protein.

52. The method of claim 51, wherein said amplifying comprises carrying out polymerase chain reaction.

53. The method of claim 44, comprising contacting said sample with a nucleic acid molecule which specifically hybridizes to a nucleic acid molecule which codes for or expresses said protein.

54. The method of claim 51, wherein said nucleic acid molecule comprises SEQ ID NO: 9, 10, 11, 12, 13, 14, 17, 18, 20, 21, 24, 25, 28 or 29.

55. The method of claim 45, comprising assaying said sample for shed protein.

56. The method of claim 45, comprising assaying said sample for antibodies specific for said protein, by contacting said sample with protein.

57. Method for diagnosing a cancerous condition comprising assaying a sample taken from a subject for an immunoreactive cell specific for a peptide derived from a protein encoded by SEQ ID NO: 1, 2, 3, 4, 8, 15, 19, 22, 26 or 31, complexed to an MHC molecule, presence of said immunoreactive cell being indicative of said cancerous condition.

58. Composition comprising at least one peptide consisting of an amino acid sequence of from 8 to 25 amino acids concatenated to each other in the isolated cancer associated antigen of claim 13, and a pharmaceutically acceptable adjuvant.

59. The composition of claim 58, wherein said adjuvant is a saponin, a cytokine, or GM-CSF.

60. The composition of claim 58, comprising a plurality of MHC binding peptides.

61. Composition comprising an expression vector which encodes at least one peptide consisting of an amino acid sequence of from 8 to 25 amino acids concatenated to each other in the isolated cancer associated antigen of claim 13, and pharmaceutically acceptable adjuvant.

62. The composition of claim 61, wherein said expression vector encodes a plurality of peptides.

63. A method for screening for possible presence of a pathological condition, comprising assaying a sample from a patient believed to have a pathological condition for antibodies specific to at least one of the cancer associated antigens encoded by SEQ

ID NOS: 1, 2, 3, 4, 8, 15, 19, 22, 26 or 31, presence of said antibodies being indicative of possible presence of said pathological condition.

64. The method of claim 63, wherein said pathological condition is cancer.

65. The method of claim 63, wherein said cancer is melanoma, breast cancer or prostate cancer.

66. The method of claim 63, further comprising contacting said sample to purified cancer associated antigen encoded by SEQ ID NO: 1, 3, 4, 8, 15, 19, 22, 26 or 31.

67. A method for screening for possible presence of a pathological condition in a subject, comprising assaying a sample taken from said subject for expression of a nucleic acid molecule, the nucleotide sequence of which comprises SEQ ID NO: 1, 2, 3, 4, 8, 15, 19, 22, 26 or 31, expression of said nucleic acid molecule being indicative of possible presence of said pathological condition.

68. The method of claim 67, wherein said pathological condition is cancer.

69. The method of claim 67, comprising determining expression via polymerase chain reaction.

70. The method of claim 67, comprising determining expression by contacting said sample with at least one of SEQ ID NO: 9, 10, 11, 12, 13, 14, 17, 18, 20, 21, 24, 25, 28 or 29.

71. A method for determining regression, progression of onset of a cancerous condition comprising monitoring a sample from a patient with said cancerous condition for a parameter selected from the group consisting of (i) a cancer associated antigen encoded by SEQ ID NO: 1, 2, 3, 4, 8, 15, 19, 22, 26 or 31, (ii) a peptide derived from said cancer associated antigen, (iii) cytolytic T cells specific for said peptide and an MHC molecule with which it non-covalently complexes, and (iv) antibodies specific for said cancer associated antigen, wherein amount of said parameter is indicative of progression or regression or onset of said cancerous condition.

72. The method of claim 71, wherein said sample is a body fluid or exudate.

73. The method of claim 71, wherein said sample is a tissue.

74. The method of claim 71, comprising contacting said sample with an antibody which specifically binds with said protein or peptide.

75. The method of claim 74, wherein said antibody is labelled with a radioactive label or an enzyme.

76. The method of claim 74, wherein said antibody is a monoclonal antibody.

77. The method of claim 71, comprising amplifying RNA which codes for said protein.

78. The method of claim 77, wherein said amplifying comprises carrying out polymerase chain reaction.

79. The method of claim 71, comprising contacting said sample with a nucleic acid molecule which specifically hybridizes to a nucleic acid molecule which codes for or expresses said protein.

80. The method of claim 71, comprising assaying said sample for shed cancer associated antigen.

81. The method of claim 71, comprising assaying said sample for antibodies specific for said cancer associated antigen, by contacting said sample with said cancer associated antigen.

82. Method for screening for a cancerous condition comprising assaying a sample taken from a subject for an immunoreactive cell specific for a peptide derived from a cancer associated antigen encoded by SEQ ID NO: 1, 2, 3, 4, 8, 15, 19, 22, 26 or 31, complexed to an MHC molecule, presence of said immunoreactive cell being indicative of said cancerous condition.

83. An isolated nucleic acid molecule consisting of a nucleotide sequence as set forth at SEQ ID NO: 1, 2, 3, 8, 15, 19, 22, 26 or 31.

84. Isolated nucleic acid molecule the complimentary sequence of which hydridizes, under stringent conditions, to the nucleotide sequence set forth in SEQ ID NO: 4, 5, 8, 15, 19, 22, 26 or 31.

85. An isolated polypeptide comprising at least 9 consecutive amino acids set forth in SEQ ID NO: 5, 7, 16, 19, 23, 27, 30 or 32.

86. The isolated polypeptide of claim 85, comprising at least 9 consecutive amino acids set forth in SEQ ID NO: 23, 30 or 32.

87. The isolated polypeptide of claim 86, comprising at least 9 consecutive amino acids of the amino acid sequence set forth in SEQ ID NO: 23.

88. The isolated polypeptide of claim 87, comprising amino acids 102-111, 904-912 or 1262-1270 of SEQ ID NO: 23.

89. An isolated nucleic acid molecule which encodes the amino acid sequence of SEQ ID NO: 30.

90. An isolated nucleic acid molecule which encodes the isolated polypeptide of claim 88.

91. Expression vector comprising the isolated nucleic acid molecule of claim 90, operably linked to a promoter.

92. The isolated cancer associated antigen of claim 13, comprising the amino acid sequence encoded by SEQ ID NO: 31.

93. The composition of matter of claim 37, wherein said peptide is LLSHGAVIEV or SLSKILDTV, complexed to an HLA-A2 molecule.

94. The method of claim 42, wherein said cancer is breast cancer or prostate cancer.

95. The method of claim 43, wherein said cancer is breast cancer or prostate cancer.

96. The method of claim 44, wherein said cancer is breast cancer or prostate cancer.

97. The method of claim 45, wherein said cancer is breast cancer or prostate cancer.

98. The method of claim 57, wherein said peptide is LLSHGAVIEV or SLSKILDTV, and said MHC molecule is HLA-A2.

99. The composition of claim 58, wherein said peptide is LLSHGAVIEV or SLSKILDTV.

100. A method for treating a subject afflicted with cancer, comprising administering to said subject a therapeutically effective amount of the peptide of SEQUENCE LLSHGAVIEV or SLSKILDTV, sufficient to alleviate said cancer.

101. The method of claim 100, comprising administering said peptide in combination with an adjuvant.

102. The method of claim 100, wherein said cancer is breast cancer or prostate cancer.

103. A method for treating a subject afflicted with cancer, comprising administering to said subject an immunoreactive agent reactive with NY-BR-1 protein or a peptide consisting of an amino acid sequence identical to a portion of NY-BR-1, sufficient to alleviate said cancer.

104. The method of claim 103, wherein said immunoreactive agent is an antibody.

105. The method of claim 103, wherein said immunoreactive agent is a cytolytic T cell.

106. The method of claim 105, wherein said immunoreactive agent is a cytolytic T cell specific for complexes of HLA-A2 and the peptide of sequence LLSHGAVIEV or SLSKILDTV.

107. The method of claim 103, wherein said cancer is breast cancer or prostate cancer.

108. An antibody which binds specifically to a complex of an MHC molecule and a peptide, the amino acid sequence of which consists of an amino acid sequence found in the amino acid sequence of SEQ ID NO: 23 or SEQ ID NO: 32.

109. The antibody of claim 108, wherein said MHC molecule is an HLA Class I molecule.

110. The antibody of claim 108, wherein such antibody is an HLA Class II molecule.

111. The antibody of claim 109, wherein said HLA molecule is HLA-A1, HLA-A2, HLA-A3, HLA-A26, HLA-B7, HLA-B8, HLA-B15, HLA-B27, HLA-B35, HLA-B44, HLA-B51, HLA-B57, HLA-Cw3, or HLA-Cw6.

112. The antibody of claim 109, wherein the amino acid sequence of said peptide consists of (i) amino acids 102-111 of SEQ ID NO: 23, amino acids 904-912 of SEQ ID NO: 23, or amino acids 1262-1270 of SEQ ID NO: 23.